



Review Article

## UNVEILING THE POTENTIAL OF TAKRA (BUTTERMILK) IN MADHUMEHA (DIABETES MELLITUS) MANAGEMENT: AN AYURVEDIC APPROACH

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### ABSTRACT

*Madhumeha*, which results from an imbalance in *Medodhatu (Meda Pradoshaja Vikara)*, is analogous to diabetes mellitus. The increasing costs and side effects of medications have highlighted the necessity of managing the disease through dietary and lifestyle interventions. A well-planned diet has proven therapeutic benefits and relying solely on medication is insufficient for effective treatment. Since *Madhumeha* (Type 2 Diabetes Mellitus) is considered a lifestyle disease, adopting a new dietary approach can be highly beneficial. The traditional Indian medicine system, Ayurveda, has long explored various natural remedies for managing chronic ailments. One such remedy is *Takra*, a fermented dairy product, renowned for its therapeutic properties. This article delves into the role of *Takra* in managing *Madhumeha*, a condition analogous to diabetes mellitus in modern medicine. *Takra* is believed to possess unique properties that aid in the regulation of blood sugar levels, improve digestion, and enhance metabolic processes. The article highlights the potential benefits of *Takra* as an adjunctive treatment for *Madhumeha*. The findings suggest that incorporating *Takra* into the diet could offer a holistic approach to diabetes management, emphasizing the synergy between traditional knowledge and modern scientific understanding.

### INTRODUCTION

Diabetes affects an estimated 537 million adults worldwide between the age of 20 to 79 (10.5% of all adults in this age range). By 2030, 643 million people will have diabetes globally, increasing to 783 million by 2045<sup>[1]</sup>. In Ayurveda, all polyureic disorders are categorised under "Prameha," and Type 2 Diabetes Mellitus is equivalent to *Madhumeha*, one of these diseases.

The symptoms of type 2 diabetes closely resemble those of the acquired form of *Prameha*, also known as *Apathya nimittaja Prameha*. According to the *Charak Samhita*, *Madhumeha* is a kind of *Vataja Prameha*, which is typified by the overflowing passage of honey-like urine.

Humanity has been aware of *Madhumeha's* illness since the Vedic era. The words "*Madhu*" and "*Meha*," which translate to "honey" and "excessive flow," respectively, are combined to form the word "*Madhumeha*." The two main risk factors for *Madhumeha*<sup>2</sup> are *Apathya Vihara* (lifestyle incompatibilities) and *Apathya Ahara* (dietetic incompatibilities).

Diabetes mellitus is the most common endocrine condition, characterised by elevated blood glucose levels mostly due to insulin insufficiency.

### AIM AND OBJECTIVES

To evaluate the role of *Takra* in *Madhumeha*.

### MATERIALS AND METHOD

For this conceptual study, literature had been collected from different research paper, journals, modern texts Ayurvedic texts like *Sushruta Samhita*, *Ashtang Hridaya*, *Charaka Samhita*, *Bhavprakash* etc.

### Nidana (Etiological Factors)

According to Ayurveda, there are several *nidana* (etiological factors) associated with *Madhumeha*. Excessive intake of heavy, unctuous, sour

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and saline taste food. Newly harvested crops like cereals, rice, etc. and fresh wine consumption in large quantity, sedentary lifestyle, not indulging in any sort of physical and mental exercise. Ones who do undergo bio purification off the body<sup>[3]</sup>.

**Samprapti (Aetiopathogenesis)**

*Kapha* undergoing increase by the etiological factors, reaches various *Dushya* like *Rasa* (plasma), *Rakta* (blood) etc., As there is a *Shaithilyata Dhatukshayajanya Madhumeha (Ch. Ni. 4/37)*

(looseness) in the body and it being fluid predominant, spreads all over the body and gets vitiated, while spreading it gets mixed with *Meda* (fat adipose tissue), *Mamsa* (muscle) and *Kleda* (body fluids). Body fluids which got vitiated draw them to the urinary bladder and produces *Prameha*; similarly, the *Pitta* affects them, *Vata* also brings about vitiation in them and produce *Prameha*<sup>[4]</sup>.

*Vataprakopajanya Hetusevana in Pramehi*

*Vata Prakopa*

*Kshaya of vital Dhatu*

*Vital Dhatu including Oja turns towards Basti*

*Ruksha vata converts Madhura Rasatmaka Oja into Kashaya Rasa*

*Kashaya Rasatmaka Oja excreted through Urine*

*Madhumeha*

**Avaranajanya Madhumeha**

*Kapha and Pitta Dosha Prakopa Janya Ahara & Vihara*

*Vitiated Pitta and Kapha vitiates excess amount of Mamsa and Meda*

*Causes obstruction to normal pathway to Vata*

*Aggrevation of Vata*

*Aggrevated Vata drows out Sarvashariragata Oja (Apara Oja)*

*Oja turns towards Basti by Vayu*

*Madhumeha*

**Lakshana (Symptom):** include the passage of urine with a sweet taste and a body odour similar to honey. The urine is unctuous, pale, sweet, and astringent<sup>[5]</sup>.

**Bheda (Types):** It is of two types *Dhatukshayajanya* and *Margaavaranaajanya*. In both the types, *Vata* is aggravated which results into *Madhumeha*<sup>[6]</sup>.

**Prognosis (Sadhya-Asadhyata)**

*Charak* describes the prognosis in three categories:<sup>[7]</sup>

1. *Sadhya- Kaphaja Prameha*, early- diagnosed patients, *Sthoola* (obese) and the origin of their disease is *Apathyaja*.
2. *Yapya - Pittaja Prameha*

3. *Asadhya - Vataja Prameha* is incurable and inherited *Madhumeha*, a *Krusha* (lean) patient who is suffering with *Sahaja* Type.

**Chikitsa (Management)**

*Madhumeha* can be controlled by combining the following four strategies<sup>[8]</sup>:

1. *Nidana parivarjana*
2. *Aahara*
3. *Vihara*
4. *Aushadha*

Treatment for *Prameha* in Ayurveda is determined solely by the constitution of the individual<sup>[9]</sup>. In addition to medication and nutrition,

the patient is also recommended to lead an active and healthy lifestyle. The treatment is based on a complete lifestyle transformation. Stress is placed on the illness's psychological effects as well. As crucial, if not more so, to maintaining blood glucose control and averting illness consequences are the roles played by *Aahara* and *Vihara*.

### Takra

*Takra* can also be found in the *Vedas*, which state that humans have *Takra* (buttermilk) on Earth to be eternal in heaven and that God obtained immortality from a pious drink (*Amrut*) in heaven, as stated in *Vaidyakiya Subhashit Sahityam*.<sup>[10]</sup> It is also mentioned that it was very difficult for *Shakra* (The King of God-Indra) to get the *Takra* (Buttermilk).<sup>[11]</sup>

There are numerous variations of buttermilk preparations and their techniques accessible globally. It is a nutritional supplement that has been consumed for ages by a large number of individuals worldwide. In

India, curd is churned to make buttermilk, which is referred to as traditional buttermilk.

### Importance of Takra

In the *Charaka Samhitha*<sup>[12]</sup>, *Charaka* primarily discusses the significance of *Takra* (buttermilk) in a variety of contexts. In conditions like *Sneha vyapad* (complication from abuse of oily substances), *Garavisha* (low potency poison), *Shodha* (swelling), *Grahani dosha* (sprue), *Mutragrha* (difficulty in Micturation), *Udara* (ascites), *Aruchi* (anorexia), in *Udara* (ascites), etc., *Charaka*<sup>[13]</sup> has recommended *Takra* (buttermilk). Additionally, according to *Charaka*, *Takra* (buttermilk) can be utilised for the following conditions: *Vata-Kapha pradhan vyadhi*, *Gaurava* (heaviness in the body), *Atisaara* (diarrhoea), and *Mandagni* (low digestive fire). *Takra*, or buttermilk, is indicated in *Vata-Kaphapradhan Arsha* (piles). Buttermilk, or *Takra*, is also regarded as the most effective remedy for *Vata-Kapha Pradhana*<sup>[14]</sup>.

### Properties of Takra (buttermilk)

	<i>Charak</i>	<i>Sushruta</i>	<i>Ashtang sangraha</i>	<i>Ashtang hridaya</i>	<i>Bhavprakash</i>
<i>Rasa</i>	<i>Kashaya, Amla</i>	<i>Madhura, Amla</i>	<i>Kashaya, Amla</i>	<i>Amla, Kashaya</i>	<i>Kashaya, Madhura</i>
<i>Anurasa</i>	-	<i>Kashaya</i>	-	-	
<i>Virya</i>	<i>Ushana</i>	<i>Ushana</i>	-	-	<i>Ushana</i>
<i>Vipaka</i>	<i>Madhura</i>	<i>Madhura</i>	-	-	<i>Madhura</i>
<i>Guna</i>	<i>Deepan, Grahi, Laghu</i>	<i>Laghu Agnideepan Vata-kapha naashak</i>	-	-	-
Types	3 ( <i>Ruksha takra, Ardhruta sneha takra, Anudhruta takra</i> ) <sup>[15]</sup>	2 ( <i>Takra, Ghol</i> )	-	-	5 ( <i>Ghola, Madhita, Takra, Udshivta, Chachika</i> )

### Takra: Nutritional Composition<sup>[16-18]</sup>

S.No.	Content	Quality	%Value
1.	Calories	-	100
2.	Total Fat	2.2gm	4%
3.	Saturated Fat	1gm	8%
4.	Cholesterol	10mg	4%
5.	Sodium	260mg	10%
6.	Total carbohydrates	10g	4%
7.	Protein	8g	15%
8.	Vitamin A	130.00IU	2%
9.	Vitamin C	5mg	4%
10.	Calcium	-	30%
11.	Thiamine	-	6%
12.	Zinc	-	8%
13.	Riboflavin	-	20%
14.	Vitamin B-6	-	4%
15.	Folate	-	4%
16.	Vitamin B-12	-	10%

17.	Phosphorus	-	20%
18.	Magnesium	-	8%
19.	Potassium	370mg	-
20.	Calcium	284mg	-
21.	Protein	16.55g	33.1%
22.	Iron	0.25mg	1.4%

### Buttermilk

Buttermilk is regarded as a complete food since it is nutritious, has all the components needed for a well-balanced diet, and includes proteins, carbs, low levels of fat, vitamins, and vital enzymes. Buttermilk contains 90% water, thus eating it every day helps to keep the body's water balance stable. It absorbs slowly from the intestines since the majority of its contents are mixed with proteins. To get the health benefits, buttermilk is always preferable to other flavoured drinks or just plain water. Though it tastes sour, fermented buttermilk is physiologically extremely nourishing for human tissues.<sup>[19]</sup>

After a large meal, buttermilk helps to calm the lining of the stomach and intestines and has the ability to lessen the effects of spicy food. By adding ginger, cumin powder, and other spices to buttermilk, you can help soothe any stomach distress that the spicy dish may have produced. Along with its many health advantages, buttermilk helps to lower body temperature. It relieves numerous symptoms and illnesses that affect women, and it is well-liked by women before and after menopause. Buttermilk is an excellent approach to offset the symptoms during hot flashes. Individuals who have elevated body temperatures and metabolic rates can benefit from buttermilk's many health benefits include lowering body temperature.<sup>[19-20]</sup>

### Benefits of Takra

*Takra* has shown to be quite helpful in treating *Grahani dosha* (sprue), not merely *Udara* (ascites) and *Arsha* (piles). *Grahani dosha* (sprue) is linked to *AgniVikriti*, and in this situation, *Takra* (buttermilk) acts as *Grahi* and *Laghavatva* quality (lightness in the body), *Deepana* (stimulates the force of digestion), and so enhances *Grahani*.

Due to its *Tridoshghna guna*, buttermilk, or *Takra*, is beneficial in *Pittadosha* due to its *Madhura* (sweet) *Vipaka*; beneficial in *Kapha Dosh* by due to its *Kashaya rasa* (astringent taste), *Ushna Virya* (hot potency), *Vikasitva* (relieves stiffness and causes looseness of joints) and *Ruksha Guna* (dry property); beneficial in *Vatadosha* by due to its *Snigdha guna* and *Madhura* and *Amla Rasa* (sweet & sour taste).<sup>[21]</sup>

When butter was first created, it was referred to as traditional buttermilk, which is the liquid that remains after cream is turned into butter. It refers to a variety of dairy beverages that are sour in flavour, easy

to digest, and have astringent qualities. It eases the sensation of puffiness and aids in better digestion. It is a natural remedy for spleen diseases, anaemia, gastrointestinal issues, oedema, irritability, and lack of appetite. It also contains all the necessary macronutrients.<sup>22</sup>

### Effect of Takra in Madhumeha

#### 1. Enhances Digestion and Metabolism

In Ayurveda, a healthy digestive system is fundamental to overall well-being. *Takra* aids digestion by stimulating *Agni* (digestive fire), ensuring efficient nutrient absorption and metabolic processes. This is crucial for individuals with *Madhumeha*, as optimal digestion helps in better management of blood glucose levels.

#### 2. Balances Doshas

*Madhumeha* is often linked to an imbalance of *Kapha* and *Pitta doshas*. *Takra* helps in reducing *Kapha* and *Pitta* while balancing *Vata*, thus restoring the overall *Doshic* equilibrium. This balance is essential in mitigating the symptoms and progression of diabetes.

#### 3. Low in Calories and Fat

Unlike whole milk, *Takra* is low in calories and fat, making it an ideal dietary component for weight management. Maintaining a healthy weight is critical in diabetes control, as excess weight can exacerbate insulin resistance.

#### 4. Rich in Probiotics

*Takra* is a natural source of probiotics, which are beneficial bacteria that support gut health. A healthy gut flora can enhance overall metabolism and improve insulin sensitivity, aiding in better regulation of blood sugar levels.

#### 5. Hydration and Satiety

*Takra* provides hydration and helps in maintaining electrolyte balance. Its consumption can also induce a feeling of fullness, reducing the tendency to overeat and thus helping in weight control, which is vital for diabetes management.

### CONCLUSION

*Madhumeha*, which is associated with Type-2 diabetes mellitus, requires a good *Pathya aahar* & *Vihar* regimen in addition to medication. Hurrying, worrying, eating, and being under constant psychological stress these days result in compromise

or an unhealthy way of living. A poor lifestyle causes *Oja-Bala Dosha* (immune dysregulation), *Agni-Bala Vaishamya* (impaired digestion and metabolism), and *Srotodushti* (deregulation of bodily channels), all of which are precursors to a range of lifestyle illnesses. Diabetes mellitus is not viewed by Ayurveda as a condition that can be cured by diet or medication alone. Even though the illness is *Yapya*, meaning that it is difficult or impossible to cure.

For the management and prevention of lifestyle problems, Ayurveda offers excellent choices such as food modification, pharmaceutical and non-pharmacological *Rasayana*, *Dincharya*, *Ritucharya*, *Satvavajaya Chikitsa*, and *Sadvratta*. An essential part of each prescription in Ayurvedic clinical practice is *Pathyapathya*, or the dos and don'ts related to lifestyle and nutrition. Better ways to live are the main focus of Ayurvedic lifestyles.

*Takra's* superiority undoubtedly, the ideal combination for a diabetic's dietary drink is *Anupana*. In *Prameha*, *Takra* serves as both a *Pathya* and a therapeutic intervention. Several Ayurvedic scriptures propose this food combination in relation to *Prameha*. The literature research conducted for this paper sheds light on the advantages of this diet in *Prameha*.

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